**CHARLES LEDDON PhD, ATC, CSCS**

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**EDUCATION**

***OREGON STATE UNIVERSITY \**** Corvallis, Oregon

***Doctor of Philosophy in Nutrition and Exercise Sciences***

Major Area: Sports Medicine, Minor Area: Biomechanics

Dissertation: The loss of glenohumeral range of motion and its effects on joint position sense, force production and capsuloligamentous translation in baseball pitchers.

***OREGON STATE UNIVERSITY \**** Corvallis, Oregon

***Master of Science in Exercise and Sports Science***

Major Area: Biomechanics

Thesis: Contributions of selected muscles to the dynamic stability of the medial aspect of the elbow.

***PEPPERDINE UNIVERSITY \**** Malibu, California

***Bachelor of Science in Sports Medicine***

**PROFESSIONAL EXPERIENCE**

***ARIZONA STATE UNIVERSITY \* Assistant Teaching Professor \**** Tempe, AZ 8/22– Present

Responsibilities include: Teaching multiple courses within the Sports Science and Performance Programming track. Assist in developing and maintaining competencies for the program to obtain and maintain accreditation from the NSCA. Mentor students and provide support for research projects. Recruit and work with industry to support research and educational labs. Course creation/preparation, exam writing, grading and student advising.

***LEDDON SPORT TECH \* Managing Partner \**** Peoria, AZ – 4/20 – Present

Responsibilities include: Consulting for companies in sports science, athletic training and strength and conditioning projects. Assist in the development of products, facilities and research to improve opportunities in the professional, collegiate and public offerings in the sports medicine environment. Managing all aspects of the business, including recruiting new clients, developing and administering contracts and deliverables.

***CINCINNATI REDS \* Director of Sports Science Initiatives \**** Goodyear, AZ 10/15 – 12/21

Responsibilities included: Evaluation of products and procedures used in the organization’s sports medicine facilities, strength and conditioning programs and new technologies in player development. Provide insight and direction for research initiatives within the organization as well as presentation of product evaluation results and recommendations to front office personnel.

***ARIZONA STATE UNIVERSITY \* Faculty Associate \**** Tempe, AZ 8/17 – 12/17

Responsibilities included: Instructor for Anatomical Kinesiology Course. Course preparation, exam writing, grading and student advising.

***ANDREWS RESEARCH & EDUCATION FOUNDATION \* Sports Medicine Research Director \****

Gulf Breeze, FL 8/12 – 6/17

Responsibilities included: Directing all aspects of investigator initiated and physician fellows

research projects at the foundation. Engagement of industry in sports medicine research projects. Procuring funding for projects from cooperate and foundation sources. Providing insight and direction for research initiatives across the campus and acting as a liaison to the hospital system IRB. (Previously Andrews Research and Education Institute. Prior to 2015, Title change/Promotion at same time from Research Associate)

***CINCINNATI REDS \* Minor League Athletic Trainer \**** Goodyear, AZ 1/07 – 10/15

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of professional baseball players. Assist in the supervision of strength and conditioning program, equipment management and distribution, travel secretary, and computer data entry.

*Pensacola Blue Wahoos \* Southern League, 2011-2015 (‘13 ATC of the Year)*

*Phoenix Desert Dogs \* Arizona Fall League, 2011*

*Billings Mustangs \* Pioneer League, 2007 – 2010 (’09 & ‘10 ATC of the Year)*

***OREGON STATE UNIVERSITY \* Graduate Assistant \**** Corvallis, OR 8/07 – 3/11 & 8/97 – 6/00

Multiple types of assistantships during the two separate time periods of my educational process.

***Graduate Assistant Athletic Trainer*** *(1997*-1998) - Primary Sport Responsibility: - Soccer

***Rec Center Manager*** *(1999-2000) –* Managedand programed forcampus recreation facility.

***Graduate Research/Teaching Assistant*** *(1999*-2000) - Responsibilities included: Instructor for Motor Control Lab and Activity Courses, Research duties included work on a microgravity research grant and biological robotics project.

***Graduate Teaching Assistant*** *(2007-2011)* - Responsibilities included: Instructor for Athletic Training Courses and Labs.

***KANSAS CITY ROYALS \* Minor League Athletic Trainer \**** Surprise, AZ 3/02 – 10/06

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of professional baseball players. Assist in the supervision of strength and conditioning program, equipment management and distribution, travel secretary, and computer data entry.

*Phoenix Desert Dogs \* Arizona Fall League, 2004 (Champions)*

*Wichita Wranglers \* Texas League, 2003 - 2006 (‘03 ATC of the Year)(‘03,’04 All Star ATC)*

*Burlington Bees \* Midwest League, 2002*

***USA LUGE TEAM \* Junior Team Athletic Trainer \**** Lake Placid, NY 10/02 – 2/03

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of national team members during international training and competition schedule. Supervision of the player’s strength and conditioning program, equipment management and distribution, travel secretary, and computer data entry were also required.

***BOSTON RED SOX \* Minor League Athletic Trainer \**** Ft. Myers, FL 3/01 – 10/01

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of professional baseball players. Supervision of the player’s strength and conditioning program, equipment management and distribution, travel secretary, and computer data entry were also required.

*Lowell Spinners \* New York Penn League, 2001*

***SAN FRANCISCO DEMONS (XFL) \* Training Camp Asst. Athletic Trainer \**** Las Vegas, NV 1/01 - 2/01

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of professional football players, under the direction of the head athletic trainer during the teams preseason camp.

# NASA - AMES RESEARCH CENTER \* Research Fellow \* Moffet Field, CA 6/99 - 6/00

Responsibilities included: Developing, conducting, and presenting biomechanical and perceptual experimentation with a hypo-gravity simulator. Organization and development of lab facilities and equipment was also included.

***AUSTRAILIAN NATIONAL BASEBALL TEAM \* Athletic Trainer \**** Multiple Cities, USA 6/97 - 7/97

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of international baseball players during United States tour.

***ST. MARY’S COLLEGE OF MARYLAND \* Head Athletic Trainer \**** St. Mary’s City, MD 11/96 - 5/97

Responsibilities included: Direction of intercollegiate athletic training program, including supervision and instruction of student athletic trainers. Responsible for supply and budget control, equipment maintenance; course Instructor (*Care and Prevention of Athletic Injuries*).

***NEW YORK METS \* Minor League Athletic Trainer \**** Port St. Lucie, FL 3/94 - 9/96

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of professional baseball players. Supervision of strength and conditioning program, equipment management and distribution, travel secretary, and computer data entry, were also required.

*St. Lucie Mets \* Florida State League, 1996 (Champions)*

*Pittsfield Mets \* New York Penn League, 1995*

*Gulf Coast Mets \* Gulf Coast League, 1994*

***LICEY BASEBALL CLUB \* Head Athletic Trainer \**** Santo Domingo, Dominican Republic 10/95 - 12/95

Responsibilities included: Preventative care, evaluation, treatment, and rehabilitation of professional baseball players, including numerous Major League players. Supply control and ordering.

***BACK REHAB CENTER OF ST. MARY’S \* Rehab Manager \**** Lexington Park, MD 10/92 - 10/93

Responsibilities included: Record keeping, instruction and supervision of rehabilitation programs for spinal injury patients; Administration of EKG, surface EMG and computerized muscle testing.

**CONSULTING AND ADVISORY ROLES**

**MAYO Sports Medicine \* Consultant/Advisor** \* 2022 – current

Advisor in the design and development of an indoor baseball biomechanics lab for the collection and interpretation of baseball pitching data. Implementation of automated analysis pipelines and reporting for markerless biomechanics data.

**WIN REALITY *\* Advisory Board Member \**** 2019 – 2023

Providing guidance in the development, testing, and deployment of baseball products and modules within the virtual reality environment. Advisory role in the progression of the platform to expand product use in the areas of fan engagement and amateur use models.

**SIMI BIOMECHANICS** **\* Consultant/Advisor \*** 2015 – 2022

Advisor in the development of a novel markerless biomechanics system for collection and evaluation of in stadium performance. Assisted in the development of automated analysis pipelines and web-based dashboard system to provide faster access to the data collected.

**CERTIFICATIONS**

National Athletic Trainers Association Board of Certification - Certified Athletic Trainer (#119202506)

National Strength & Conditioning Association - Certified Strength and Conditioning Specialist (#200528191)

American Safety and Health Institute- CPR/AED Certification – BLS Healthcare Provider (Reg# - 693295)

National CPR Foundation – First Aid Certification (ID#: 31EFB3C)

**COMMUNITY SERVICE**

**Sidewinder Little League –** Board of Directors – Safety Coordinator – Peoria, AZ (2021-Present) –Coordinate safety training, manual preparation and maintain safe environment for players and coaches.

**Arrowhead Little League –** Volunteer T-ball Coach –Phoenix, AZ (2020) – Coached a team of 12 kids during the fall season.

**Habitat for Humanity** – Sponsor: Queen of Peace Catholic Church, Salem, OR (2009-2010) – Day worker on houses being built for low-income families.

**Upward Bound** – Sponsor: MSU-Billings, Billings, MT (2009) – Activity Organizer and Speaker for underprivileged adolescents in a collegiate preparatory program.

**TEACHING EXPERIENCE**

**Arizona State University – Assistant Teaching Professor / Faculty Associate**

SSP 142 Sports Performance Practical Training (F’22-23, Sp’23)

SSP 242 Resistance Training Foundations for Performance (F’22-23, Sp’23)

SSP 325 Applied Anatomy and Biomechanics of Sport and Movement (F’22, Sp23)

CHS 100 Optimizing Health & Performance (Sp’23, F’23)

KIN 101 Introduction to Kinesiology (F’23)

KIN 334 Functional Anatomy and Kinesiology (F‘17)

**Oregon State University – Graduate Teaching Assistant**

EXSS 350 Orthopedic Assessment of Upper Extremity - Lab Instructor (W’11)

EXSS 380 Therapeutic Modalities - Lab Instructor (W’08-‘11) (Sp’08-‘10) (F’10)

EXSS 258 Taping and Bracing Techniques - Lecture and Lab Instructor (W’09-’10) (F’10)

EXSS 450 Orthopedic Physical Assessment - Lab Instructor (F’07-’09)

EXSS 459 Advanced Therapeutic Exercise - Lecture and Lab Instructor (Sp’08)

EXSS 458 Advanced Manual Therapy Techniques - Lecture and Lab Instructor (W’08)

EXSS 457 Advanced Therapeutic Modalities - Lecture and Lab Instructor (F’07)

EXSS 411 Movement Skill Learning and Control - Lab Instructor (W’00) (Sp’00)

PAC 287 Weight Training I - PAC Instructor (W’00) (Sp’00)

PAC 236 Softball - PAC Instructor (Sp’00)

HHP 231 Lifetime Fitness for Health - Lab Instructor (F’99)

**Montana State University Billings – Entry-Level Master’s Degree Program in Athletic Training**

Approved Clinical Instructor 2007-2010

**St. Mary’s College of Maryland - Instructor**

Care and Prevention of Athletic Injuries Spring 1997

**HONORS and AWARDS**

Southern League Athletic Trainer of the Year (2013)

Graduate Member – Phi Kappa Phi, National Honor Society

Thayer Raymond Graduate Student Research Fellowship (2010-11)

Pioneer Baseball League Athletic Trainer of the Year (2009, 2010)

National Athletic Trainers’ Association National Graduate Scholarship (2008-09)

National Athletic Trainers’ Association District 10 Graduate Scholarship (2008-09)

Professional Baseball Athletic Trainers’ Society Scholarship (2007-08)

Finalist - National Athletic Trainers’ Association Research and Education Foundation’s: “2007 Masters

Student Research Oral Presentation Award”. (2007)

Texas League Athletic Trainer of the Year (2003)

Texas League All Star Game Athletic Trainer (2003, 2004)

**MEMBERSHIPS**

National Athletic Trainers Association Board of Certification - Certified Athletic Trainer (#930436)

National Strength & Conditioning Association - Certified Strength and Conditioning Specialist (#000122757)

Professional Baseball Athletic Trainers Society – Affiliate Associate (2002-2021)

Professional Baseball Strength and Conditioning Coaches Society – Affiliate Member (2015-2021)

**PUBLICATIONS**

Escamilla, R.F., Poage, C, Brotherton, S., MacLeod, T.D., **Leddon, C.E.,** Andrews, J.A. (2022) Kinematic and Radiographic Evaluation of Acromioclavicular Reconstruction with a Synthetic Ligament. Advances in Orthopedics. 2022, Article ID 7144209, <https://doi.org/10.1155/2022/7144209>.

# Joyner, P.W., Mills, F.B., Brotherton, S., Bruce, J., Roth, T., Hess, R., Wilcox, L., Leddon C.E., Davis, B., O’Grady, C., Andrews J.A., Roth, C.A. (2020) Blumensaat Line as a Prediction of Native Anterior Cruciate Ligament Length. Orthopaedic Journal of Sports Medicine, 8(8), 1-5.

Massingale S., Alexander A., Gerkin R., **Leddon C.,** McQueary E., Allred R.C., Pardini J. (2019) Gaze stability in the elite athlete: a normative observational study.  Journal of Vestibular Research*,* 29(5), 221-228.

Ostrander, R.V., **Leddon, C.E**., Hackel, J.G., OGrady, C.P., Roth, C.A…(2016) Efficacy of unloader bracing in reducing symptoms of knee osteoarthritis. Am J Orthop, 45(5), 306-311.

Fleisig, G.S., **Leddon, C.E.,** Laughlin, W.A., Ciccotti, M.G., Mandelbaum, B.R., Aune, K.T. … Andrews, J.R. (2015). Biomechanical performance of baseball pitchers with a history of ulnar collateral ligament reconstruction. Am J Sports Med, *43*(5),1045-50.

Joyner, P.W., Wilcox, L., Roth, T.S., **Leddon, C.E.,** Bruce, J., Hess, R. … Roth, C.A. (2013). Quantification of native anterior cruciate ligament length via lateral radiographic landmark. Perfect ACL.

Hong, J.K., Barnes, M., Hague, A., **Leddon, C.E.** (2011). Reliability of press-up test for identifying and quantifying the level of scapular displacement in overhead athletes. Int J Sports Phys Therapy*,6*(4), 306-11.

[Harty](http://www.vldb.org/dblp/db/indices/a-tree/h/Harty:Tyson_H=.html), T.H., [Korienek](http://www.vldb.org/dblp/db/indices/a-tree/k/Korienek:Gene_G=.html), G.G., [**Leddon**](http://www.vldb.org/dblp/db/indices/a-tree/l/Leddon:Charles.html)**, C.,** [Bautista](http://www.vldb.org/dblp/db/indices/a-tree/b/Bautista:Abigail_B=.html), A.B. (2001). Biologically-inspired collective control for an autonomous robotic arm.Autonomous Robots, *11*(3), 299-304.

Korienek, G.G., Bautista, A.B., Harty, T.H., **Leddon, C.** (2000). The use of biologically-inspired rules to control a collective robotic arm. Distributed Autonomous Robotic Systems 2000, 131-144.

**Leddon, C.**, Welch, R.B., [Korienek](http://www.vldb.org/dblp/db/indices/a-tree/k/Korienek:Gene_G=.html), G.G., Schwandt, D. (1999). Effects of simulated altered gravity on biomechanical gait measures. NASA Ames Research Fellowship: Internal Document.

**ABSTRACTS**

**Leddon CE**, Harter RA**:** Loss of glenohumeral range of motion and its effects on eccentric strength in intercollegiate pitchers. *Medicine and Science in Sports and Exercise,***52(7S)**:796, 2020].

**Leddon, C.E.**, Harter, R.A. (2018). Glenohumeral Joint Laxity and Stiffness in Collegiate Pitchers with and without Total Range of Motion Deficit. *Journal of Athletic Training, 53(6* Supplement)*,* S-15-20.

**Leddon, C.E.**, Dirks, R.P., Harter, R.A. (2009). The influence of leg dominance and quadriceps dominance on vertical ground reaction forces in adolescent female and male athletes. *Journal of Athletic Training, 44*(2 Supplement)*,* S-10.

Harter, R.A., Dirks, R.P., **Leddon, C.E.** (2009). Differences in lower extremity anthropometric and strength measures in high school male and female athletes. *Medicine and Science in Sports and Exercise, 41*(5Supplement)*,* S-63.

**Leddon, C.E.**, Pavol, M., Harter, R.A. (2007). Contributions of selected muscles to the dynamic stability of the medial aspect of the elbow.*Journal of Athletic Training, 44*(2Supplement*),* S-10

**RESEARCH PRESENTATIONS**

**Leddon CE.** Understanding Shoulder Testing, Measurement and Strengthening in Throwing Athletes. Arizona Athletic Training Association Winter Symposium 2023 (Oral)

**Leddon CE,** Harter RA**.** Loss of glenohumeral range of motion and its effects on eccentric strength in intercollegiate pitchers. Annual Meeting the American College of Sports Medicine 2020 (Poster). {NOTE: Virtual meeting due to COVID-19 pandemic}

**Leddon CE.** The Past, Present and Future of technology in Sports Science and Orthopedics.2019: Grover Lecture: Ohio University. (Invited Speaker)

**Leddon, CE,** Harter RA.Glenohumeral Joint Laxity and Stiffness in Collegiate Pitchers with and without Total Range of Motion Deficit. 2018: *NATA National Convention.* (Oral)

**Leddon, CE**. Preserving the knees of catchers**.** *2014: ASMI Injuries in Baseball Course.* (Invited Speaker)

**Leddon, CE**. Shoulder biomechanics and rehabiliatation**.** *2013: Andrews Institute Sports Medicine Fellowship Conference.* (Invited Speaker)

**Leddon, CE**. Loss of range of motion in the pitcher and its effects on strength and glenohumeral laxity**.** *2013: ASMI Injuries in Baseball Course.* (Invited Speaker)

**Leddon, CE**. Challenges associated with the management of the shoulder and elbow in baseball players**.** *2012: Andrews Institute Sports Medicine Fellowship Conference.* (Invited Speaker)

**Leddon, CE**. Progress of GIRD in youth pitchers**.** *2012: ASMI Injuries in Baseball Course.* (Invited Speaker)

**Leddon, CE**. Keeping pitchers healthy through a full season. *2009: Magic City Sports Medicine Conference.* (Invited Keynote Speaker)

**Leddon, CE** Dirks R, Harter RA. The Influence of Leg Dominance and Quadriceps Dominance on Vertical Ground Reaction Forces in Adolescent Female and Male Athletes. *2009: NATA National Convention.* (Oral)

**Leddon, CE**. 20 Questions about Glenohumeral Internal Rotation Deficits**.** *2008: Reds-way Sports Medicine Conference.* (Invited Speaker)

**Leddon, CE**. Muscular Protection of the Medial Elbow. *2008: PBATS: Baseball Medicine – Injury Prevention and Treatment Techniques Conference*. (Invited Speaker)

**Leddon, CE**, Pavol M, Harter RA. Contributions of Selected Muscles to the Dynamic Stability of the Medial Aspect of the Elbow. *2007: NATA National Convention*. (Oral)

[Korienek](http://www.vldb.org/dblp/db/indices/a-tree/k/Korienek:Gene_G=.html) GG, [Harty](http://www.vldb.org/dblp/db/indices/a-tree/h/Harty:Tyson_H=.html) TH, [**Leddon**](http://www.vldb.org/dblp/db/indices/a-tree/l/Leddon:Charles.html)**, C**,  [Bautista](http://www.vldb.org/dblp/db/indices/a-tree/b/Bautista:Abigail_B=.html) AB. Emergent Behavior of a Robotic Limb: An Example of a Biologically Inspired Collective Control Architecture. *2000: Robotics 2000: The 4th International Conference and Exposition/Demonstration on Robotics for Challenging Situations and Environments.* (Poster)

[Korienek](http://www.vldb.org/dblp/db/indices/a-tree/k/Korienek:Gene_G=.html) GG, [Harty](http://www.vldb.org/dblp/db/indices/a-tree/h/Harty:Tyson_H=.html) TH, [**Leddon**](http://www.vldb.org/dblp/db/indices/a-tree/l/Leddon:Charles.html)**, C**. "Mars Pants," A Lower Body Pressure Differential Approach to Locomoting in Simulated Altered Gravity. *2000: Space 2000: The 7th International Conference and Exposition on Engineering, Construction, Operations, and Business in Space.* (Poster)

Welch RB, [Korienek](http://www.vldb.org/dblp/db/indices/a-tree/k/Korienek:Gene_G=.html) GG, Schwandt D, Harty TH, **Leddon, C**, Vanyo C. Adapting to Simulated Altered Gravity. *2000: Space 2000: The 7th International Conference and Exposition on Engineering, Construction, Operations, and Business in Space*. (Poster)

Welch RB, [Korienek](http://www.vldb.org/dblp/db/indices/a-tree/k/Korienek:Gene_G=.html) GG, Schwandt D, Harty TH, **Leddon, C**, Vanyo C. Adapting to Simulated Altered Gravity. *1999: NASA Ames Life Sciences Research Conference.* (Poster)

**RESEARCH GRANTS**

**Leddon, CE,** Fleisig G Escamilla RF. Biomechanics of baseball pitchers with history of ulnar collateral ligament reconstruction.Major League Baseball (Research Grant), $143,080, January 2014, *May 2015,* (PI).

**Leddon, CE,** Harter RA. The effect of rotational range of motion deficits on glenohumeral joint force production, capsuloligamentous laxity and joint position sense in collegiate baseball players. National Strength and Conditioning Association (Doctoral Research Grant), $5,040, July 2009, (Co-PI).

**Leddon, CE**, The effect of rotational range of motion deficits on glenohumeral joint force production, capsuloligamentous laxity and joint position sense in collegiate baseball players. Oregon State University College of Health and Human Sciences (Graduate Student Research Fund), $357, December 2010*, ,* (Co-PI).

**Leddon, CE**, Contributions of selected muscles to the dynamic stability of the medial aspect of the elbow. Oregon State University College of Health and Human Sciences (Graduate Student Research Fund), $400, January 1999 (Co-PI).